(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
18 October 2001 (18.10.2001)

PCT

(10) International Publication Number
WO 01/78151 A3

(51) International Patent Classification[7]: H01L 27/15, 51/40

(21) International Application Number: PCT/US01/07176

(22) International Filing Date: 7 March 2001 (07.03.2001)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
09/546,783 11 April 2000 (11.04.2000) US

(71) Applicant: ROCKWELL TECHNOLOGIES, LLC [US/US]; Mail Code A15, P.O. Box 1085, Thousand Oaks, CA 91358-0085 (US).

(72) Inventors: ZHUANG, Zhming; 1582 Hintz Lane #1B, Wheeling, IL 60090 (US). WARREN, Leslie, F., Jr.; 1902 La Ramada Drive, Camarillo, CA 93012-9274 (US). WILLIAMS, George, M.; 3749 Corte de Cancion, Thousand Oaks, CA 91360 (US). CHEUNG, Jeffrey, T.; 1050 Camino Flores, Thousand Oaks, CA 91360 (US).

(74) Agents: RAM, Michael, J. et al.; Koppel & Jacobs, 555 St. Charles Drive, #107, Thousand Oaks, CA 91360 (US).

(81) Designated State *(national)*: JP.

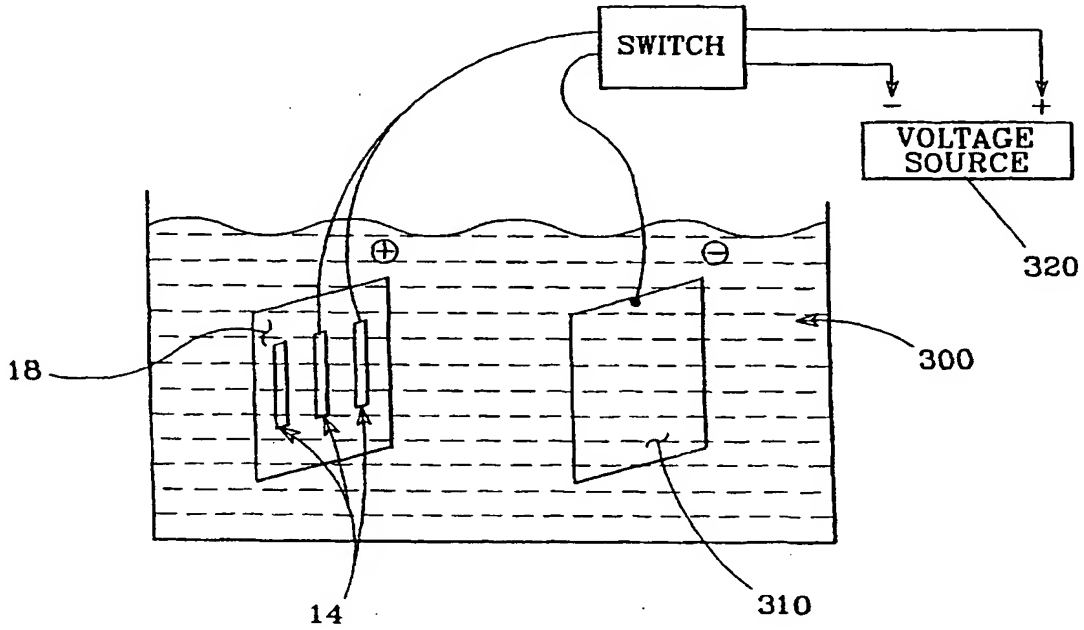
(84) Designated States *(regional)*: European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR).

Published:
— *with international search report*

(88) Date of publication of the international search report:
28 February 2002

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: PATTERNING OF POLYMER LIGHT EMITTING DEVICES USING ELECTROCHEMICAL POLYMERIZATION



(57) Abstract: Light emitters are formed and patterned on an electrode for an organic light-emitting device by electrochemically polymerizing a monomer across the full length of the electrode. A second electrode is deposited so to define a pixel region between mutually aligned portions of the two electrodes. Electroluminescence of the emitter occurs when a voltage is applied across the electrodes of the device.

WO 01/78151 A3

INTERNATIONAL SEARCH REPORT

Inte. ional Application No
PCT/US 01/07176

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 H01L27/15 H01L51/40

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 7 H05B H01L C09D

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)
EPO-Internal, PAJ, COMPENDEX, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	PATENT ABSTRACTS OF JAPAN vol. 1995, no. 06, 31 July 1995 (1995-07-31) -& JP 07 073969 A (CASIO COMPUT CO LTD), 17 March 1995 (1995-03-17) abstract	1,18-20, 28-30
A		2-17, 21-27, 31-35

	-/--	

[X] Further documents are listed in the continuation of box C. [ ] Patent family members are listed in annex.

° Special categories of cited documents :

°A° document defining the general state of the art which is not considered to be of particular relevance

°E° earlier document but published on or after the international filing date.

°L° document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

°O° document referring to an oral disclosure, use, exhibition or other means

°P° document published prior to the international filing date but later than the priority date claimed

°T° later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

°X° document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

°Y° document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

°&° document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
2 October 2001	12/10/2001

Name and mailing address of the ISA	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016	De Laere, A

2

Form PCT/ISA/210 (second sheet) (July 1992)

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication,where appropriate, of the relevant passages	Relevant to claim No.
O,X	INAOKA SEIJI ET AL: "Patterning and electrochemical deposition of conjugated and conducting polymers in organic light-emitting diodes" THE SAN FRANCISCO MEETING;SAN FRANCISCO, CA, USA MAR 26-MAR 31 2000, vol. 41, no. 1, 2000, pages 808-809, XP001028579 Am Chem Soc Polym Prepr Div Polym Chem;American Chemical Society, Polymer Preprints, Division of Polymer Chemistry 2000 ACS, Washington, DC, USA the whole document	1,18,34
O,A		2-17, 19-33,35

X	DAMLIN P ET AL: "LIGHT-EMITTING DIODES OF POLY(P-PHENYLENE VINYLENE) FILMS ELECTROCHEMICALLY POLYMERIZED BY CYCLIC VOLTAMMETRY ON ITO" SYNTHETIC METALS, ELSEVIER SEQUOIA, LAUSANNE, CH, vol. 102, no. 1-3, PART 2, 12 July 1999 (1999-07-12), pages 947-948, XP001028075 ISSN: 0379-6779 the whole document	1,18
A		2-17, 19-35

X	OSTERGARD T ET AL: "Electrochemically prepared light-emitting diodes of poly(para-phenylene)" THIN SOLID FILMS, ELSEVIER-SEQUOIA S.A. LAUSANNE, CH, vol. 311, no. 1-2, 31 December 1997 (1997-12-31), pages 58-61, XP004121320 ISSN: 0040-6090 the whole document	1,18
A		2-17, 19-35

	-/--	

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	LARMAT FERNANDO ET AL: "Comparative reactivity of thiophene and 3,4-(ethylenedioxy)thiophene as terminal electropolymerizable units in bis-heterocycle arylenes" J POLYM SCI PART A;JOURNAL OF POLYMER SCIENCE, PART A: POLYMER CHEMISTRY DEC 1997 JOHN WILEY & SONS INC, NEW YORK, NY, USA, vol. 35, no. 17, December 1997 (1997-12), pages 3627-3636, XP002178827 cited in the application the whole document ---	1-35
A	SOTZING G.A. ET AL: "Multiply colored electrochromic carbazole-based polymers" CHEMISTRY OF MATERIALS., vol. 9, 1997, pages 1578-1587, XP002178828 AMERICAN CHEMICAL SOCIETY, WASHINGTON., US ISSN: 0897-4756 cited in the application the whole document -----	1-35

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No
PCT/US 01/07176

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
JP 07073969 A	17-03-1995	NONE	